

# Missile Recycling Technology at Redstone Arsenal

**Title:** Missile Recycling Capability (MRC)

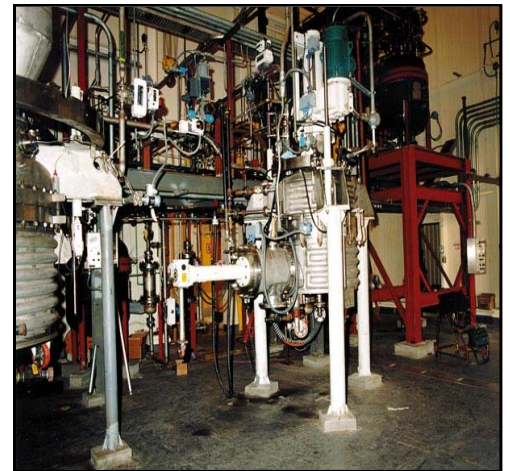
**Installation:** Redstone Arsenal, AL

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**Mission Benefits:** Provides Redstone Arsenal with viable technology alternatives for demilitarizing obsolete missile and munitions assets. Recent health concerns regarding the contamination of soil and drinking water resulting from manufacturing operations and Open Burn/Open Detonation (OB/OD) destruction of munitions have emphasized an urgent requirement to develop alternative disposition methods that are environmentally safe, compliant, and cost effective. The pilot plant operation at Redstone was the “first of its kind,” and it provided a munitions recycling alternative for the DoD demilitarization community. The pilot plant demonstrated that the disassembly of obsolete munitions could be accomplished and that the valuable energetics could be reclaimed and recycled.

**Cost Benefits:** Enhances sustainment of demilitarization operations by reclaiming and reusing energetic ingredients and hardware components. The Redstone MRC technology provides the DoD with cost avoiding alternatives for mitigating future remediation and liability obligations associated with soil and drinking water contamination.

**Environmental Benefits:** An integrated MRC will minimize pollution, waste, and environmental damage at Government facilities. The Resource Recovery and Recycling (R3) technology to recover missile assets exists. Destructive incineration and water polluting processes are avoided. The MRC meets the Legislative requirements of the Resource Conservation and Recovery Act (RCRA), Clean Air Act (Hazardous Air Pollutants and emissions), and Executive Order (EO) mandates for environmentally compliant tactical missile demilitarization.



*Missile Recycling Pilot Plant*

**Description:** The U.S. Army Aviation and Missile Command (AMCOM) has set a national precedent with the establishment of a “first of its kind” MRC for the safe disposition of obsolete and over-aged tactical missiles in an environmentally responsible and cost effective manner. The Redstone MRC technologies provide the DoD with alternatives to traditional OB/OD destruction processes. These R3 technologies are based on closed-loop processes, and they are directly applicable to the vast majority of the missiles in the Army, Navy, Air Force, and NATO demilitarization inventories. The MRC technologies will significantly reduce the environmental impacts associated with the emerging Army demilitarization requirement of over 600,000 tactical missiles over the next 10-15 years.

**MRC Capabilities:** The Redstone MRC technologies have transitioned from pilot scale demonstration to full-scale production at the Anniston Defense Munitions Center (ADMC). These technologies are being used at the ADMC to dispose of a large demilitarization inventory of TOW and MLRS missiles. The MRC technologies provide a total recycling solution that includes demonstrated capabilities for missile disassembly, rocket motor denozzling, propellant removal, warhead billet removal, billet splitting, warhead explosive size reduction, energetic ingredient recovery, slurry explosive manufacturing, and hardware decontamination. Greater than 98% of missile hardware, warhead explosives, and propellant ingredients are being reclaimed at the ADMC for reuse or recycle in a variety of industrial and military applications.



*Missile Disassembly*



*Remote Controlled Operations*



*Pack-out and Shipping*

#### **Lessons Learned:**

1. Greater linkage between pollution prevention objectives and demilitarization requirements should be considered early and incorporated as an integral part of a munitions' life cycle.
2. The importance of partnering between Government and industry cannot be underestimated in bringing together the financial and facility resources necessary to sustain effective demilitarization operations.
3. Research and development projects must have a "buy in" from PEO and Project Management organizations to effectively recycle and reuse reclaimed energetic materials and hardware assets for foreign military sales and new U.S. munition builds.

#### **Points of Contact:**

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